

Nutritional Status of the Elderly Population in a Semi-urban Area of Manipur.

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ABSTRACT

Background: Population aging is enduring and so are the problems of the elderly. Malnutrition in the elderly is an ominous sign leading to poor health and decreased quality of life. There is less number of studies regarding this problem among the elderly. Hence this study was done to assess the problem of malnutrition among the elderly in a semi-urban area of Manipur. **Aims:** To determine the prevalence of malnutrition in the elderly and to assess the association of malnutrition with some variables of interest. **Methods:** A cross-sectional study was conducted in a semi-urban area of Manipur from September 2010 to June 2013. Mini nutritional assessment (MNA) tool was used. Data was collected using interview method. Data was analysed using descriptive statistics and Chi square test and multivariate analysis was done. **Results:** There was 386 respondents and 26 (6.7%) of them were malnourished. Further, 192 (49.7%) elderly were at the risk of malnutrition. Increasing age, being single, being illiterate, having income in the lower third quartile are significantly associated with malnutrition. Being engaged in an active occupation was associated with less risk of malnutrition. Tobacco consumption in any form was significantly associated with malnutrition in females. **Conclusion:** Using the Mini-Nutritional Assessment to assess the nutritional status of the elderly, we found that nearly a half of them were at risk of malnutrition. Increasing age, being single, being illiterate, having income in the lower third quartile was significantly associated with malnutrition.

Keywords: Elderly, Malnutrition, Mini-nutritional assessment, Prevalence.

INTRODUCTION

Population aging is enduring and so are the problems of the elderly. Malnutrition in the elderly is defined by the following: faulty or inadequate nutritional status, undernourishment characterized by insufficient dietary intake, poor appetite, and muscle wasting and weight loss.^[1] Malnutrition in the elderly is an ominous sign, which without intervention leads to poor health and decreased quality of life.

Mini nutritional assessment (MNA) has been used in many studies and translated into more than 20 languages. It is a well-validated tool, with high sensitivity, specificity, and reliability.^[2] It has been developed in order to permit early nutritional intervention when needed, without needing to involve a specialist nutrition team.^[3] In theory it should be better in identifying elderly at the risk of under-nutrition since it encompasses physical and mental aspects of health.^[4-6] Moreover, it detects risk of malnutrition at a time when albumin levels and BMI are still normal.^[7]

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The nutritional status of older persons in low-income countries is inadequately documented. Logistical difficulties and the absence of simple, easy-to-handle assessment instruments make nutritional data for older adults inadequate. The data available is mainly hospital-based and they fail to incorporate essential indicators of nutritional status.^[9] There is less number of studies regarding this problem among the elderly in the community and more so in this part of the country. Hence this study was done.

Aims

The study was done to determine the prevalence of malnutrition in the elderly and also to assess the association of malnutrition with some variables of interest.

MATERIALS AND METHODS

A cross-sectional study was conducted among persons aged 60 years and above in a semi-urban area of Manipur from September 2010 to June 2013. Persons who were residing in the study area for at least one year were included in the study. Those who could not be contacted after two successive visits, who refused to participate in the study, bed-ridden or

who could not response by themselves and not having any caregiver were excluded from the study. Age was grouped as young old (60-69 years), old old (70-79 years) and oldest old (80 years and above). Data was collected using interview method using a questionnaire consisting of socio-demographic variables. MNA were used as the study instrument for assessment of malnutrition. Scores were given for each question asked and for the parameters that were measured which are there in the MNA long form.^[2] Then the scores were added together to get the total malnutrition indicator score (maximum of 30 points). If the score is 24 to 30 then the subject is in a state of normal state of nutrition. If the score is 17 to 23.5, then the subject is at the risk of malnutrition and if the score is less than 17 points then the subject is malnourished.

The whole study area was covered for data collection. Each household was visited and all eligible subjects were interviewed. Data was checked for consistency and completeness after collection and entered on the same day. Then it was entered in database software. Statistical analysis was done using descriptive statistics, data was checked for normality using Kolmogorov-Smirnov test and plotting Q-Q plots. Chi square test for categorical data and Mann-Whitney U test for continuous data were used. Multivariate regression analysis was used. Spearman's correlation coefficient was used to find out the correlation between the Body Mass Index (BMI), anthropometric measurements and MNA score. P value <0.05 was taken as significant. Ethical approval was obtained from the Institutional Ethics Committee, RIMS. Informed consent was taken from the respondents and confidentiality was maintained.

RESULTS

There were 463 elderly in the area and 386 of them responded giving a response rate of 83.7% [Figure 1]. The median age of the respondents was 67 years with a range from 60-97 years. Young old (60-69 years) constituted the majority (59.1%) of the respondents. Males constituted nearly half (46.9%) of them. Two-thirds of the respondents (66.6%) were married and majority were literates. Majority had a source of income and 70.2% were from joint families. All the respondents were non-vegetarians and all of them were Hindu by religion. [Table 1]

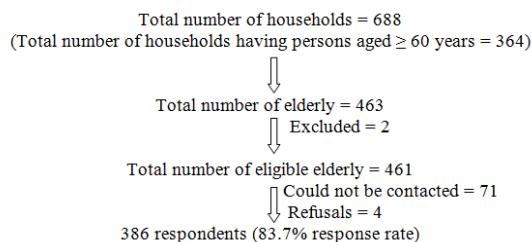


Figure 1: Flowchart of selection of study-respondents

Table 1: Socio- demographic profile of the respondents (N=386)

Characteristics	Number (%)
Age-group (in years)	
• 60-69	228 (59.1)
• 70-79	118 (30.6)
• ≥80	40 (10.4)
Sex	
• Male	181 (46.9)
• Female	205 (53.1)
Marital status	
• Currently married	257 (66.6)
• Widow	99 (25.6)
• Widower	21 (5.4)
• Unmarried/divorced	9 (2.4)
Educational status	
• Illiterate	154 (39.9)
• Primary	114 (29.5)
• Matriculate	42 (10.9)
• Higher secondary	16 (4.1)
• Graduate & above	60 (15.5)
Monthly per capita income in quartiles (Rs.)	
• <1200 (lowest)	98 (25.4)
• 1200-1928	95 (24.6)
• 1928-2857	100 (25.9)
• 2857 (highest)	93 (24.1)
Type of family	
• Nuclear	115 (29.8)
• Joint	271 (70.2)
History of alcohol consumption	
• Daily	9 (2.3)
• Occasional	48 (12.4)
• Never	258 (66.9)
• Ex-alcoholic	71 (18.4)
History of alcohol consumption	
• Yes	226 (58.5)
• No	160 (41.5)

Altogether 12 elderly persons were found to be malnourished giving a prevalence rate of 6.7% and a total of 192 elderly persons (49.7%) were found to be at risk of developing malnutrition. [Figure 2]

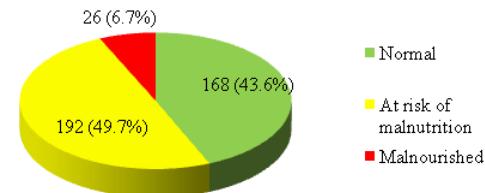


Figure 2: Nutritional status

Based on Body Mass Index (BMI) standards for Asians, 96 study subjects (24.9%) were found to be underweight while 143 (37%) were found to be having normal values. [Figure 3]

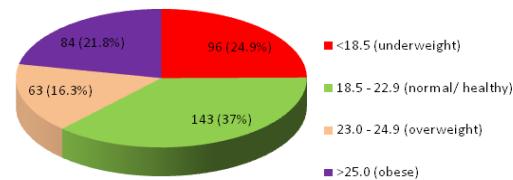


Figure 3: Nutritional status as classified by BMI standards for Asians

BMI, mid-arm circumference, calf circumference and weight were found to be positively correlated with MNA score while age was found to be negatively correlated. [Table 2]

More people in the age group of 70-79 years were at the risk of malnutrition and malnourished ($P<0.05$). Those respondents who were currently single were more malnourished and more at the risk of malnutrition ($P<0.05$). Those who were illiterate, having income less than the third quartile and having only old age pension as the source of income were significantly more at the risk of malnutrition and were more malnourished. Females who consumed tobacco were more malnourished and more at the risk of malnutrition than those who did not ($P<0.05$).

[Table 3] Also, it was found that increase in age and living without spouse were the independent factors associated with lower MNA scores ($p<0.05$). [Table5]

Table 2 Correlation between total MNA score with age, per capita income, BMI, mid-arm circumference, calf circumference, height and weight.

Parameters	Correlation co-efficient*
Age (years)	-0.377
Per capita income (Rs)	0.161
BMI	0.729
Mid-arm circumference (cm)	0.688
Calf circumference (cm)	0.712
Weight (kg)	0.721
Height (cm)	0.157

* Significant <0.01 (2-tailed)

Table 3: Association between socio-demographic variables and malnutrition indicator score (N = 386).

Characteristics	Malnutrition indicator score, N (%)			P value
	Normal nutritional status	At risk of malnutrition	Malnourished	
Age group				<0.001
• 60-69	128 (56.1)	88 (38.6)	12 (5.3)	
• 70-79	33 (28.0)	74 (62.7)	11 (9.3)	
• ≥ 80	7 (17.5)	30 (75.0)	3 (7.5)	
Marital status				<0.001)
• Currently married	139 (54.1)	104 (40.5)	14 (5.4)	
• Single	29 (22.5)	88 (68.2)	12 (9.3)	
Educational status				<0.001
• Illiterate	40 (26.0)	101 (65.6)	13 (8.4)	
• Literate	128 (55.2)	91 (39.2)	13 (5.6)	
Family type				0.971
• Nuclear	49 (42.6)	58 (50.4)	8 (7.0)	
• Joint	119 (43.9)	134 (49.5)	18 (6.6)	
Income				0.019
• $<2857^*$	116 (39.6)	157 (53.6)	20 (6.8)	
• ≥ 2857	52 (55.9)	35 (37.6)	6 (6.5)	
Source of income				0.001
• Nil	37 (38.5)	53 (55.2)	6 (6.2)	
• Active occupation	61 (46.9)	66 (50.8)	3 (2.3)	
• Old age pension	16 (26.2)	37 (60.7)	8 (13.1)	
• Service pension	54 (54.5)	36 (36.4)	9 (9.1)	
Alcohol consumption				0.425
• Yes	34 (59.6)	20 (35.1)	3 (5.3)	
• No	61 (49.2)	55 (44.4)	8 (6.5)	
Tobacco consumption (M)				0.264
• Yes	57 (52.8)	42 (38.9)	9 (8.3)	
• No	38 (52.1)	33 (45.2)	2 (2.7)	
Tobacco consumption (F)				0.012
• Yes	33 (28.0)	73 (61.9)	12 (10.2)	
• No	40 (46.0)	44 (50.6)	3 (3.4)	

* Income levels were divided into those less than 3rd quartile and having income of 3rd quartile and above

Table 4: Multiple regression model between total MNA score with age, gender, marital status, educational status, income and tobacco consumption.

Parameter	Multiple regression model		
	Unstandardized Beta	Standardized Beta	P-value
Age (years)	-0.020	-0.251	0.000
Gender	-0.109	0.090	0.153
Marital status	-0.175	-0.136	0.014
Literacy status	0.119	0.096	0.132
Income level	0.057	0.040	0.501
Tobacco consumption	0.047	0.038	0.437

DISCUSSION

The prevalence of malnutrition in the study area was found to be 6.7% and risk of malnourished to be 49.7%. Vedantam et al, Baweja et al, Aliabadi et al, Wyka et al found the prevalence of malnutrition to be around 11%-14% and risk of malnutrition at 49-62% in the rural areas.^[10-13] Baweja et al, Aliabadi et al Pai and Cuervo et al found the prevalence of malnutrition to be around 2%-9.9% and at risk of malnutrition at 14.7%- 57.4%.^[11,13-15] Kucukerdonmez et al in Ankara, Turkey found that 6.5% of the male and 8.8% of the female

participants had inadequate nutrition^[16] which is comparable with the present study finding where we found that 6.1% of males and 7.3% of females were malnourished. As seen in the above studies, rural areas had higher prevalence of malnutrition than the urban areas. The present study was done in the semi-urban area and the prevalence of malnutrition was in between the findings in rural area and urban area. It may be because of the differences in the income levels and standard of living in the rural and urban areas.

More females (9.3%) were found to be malnourished compared to males (6.1%). Compared to the males, more females were staying single, illiterate and having no regular income. All these factors may be influencing the nutritional status of the females. Family structure whether joint or nuclear seemed to have no effect on the malnutrition status of the elderly but having a spouse had a significant effect. Those elderly, who were currently single were more malnourished and more at risk of malnutrition ($p<0.05$). Aliabadi et al found that the percentage of malnutrition and risk of malnutrition in subjects that lived alone were higher than those who lived with their families.^[12] Majority of the males were currently married and staying with a spouse while nearly half of the females were staying single and they were mostly widows (25.6%) or unmarried (2.1%). This may be because widows seldom remarry in the area while widowers remarry.

Those individuals who were having income below the third quartile or having only old age pension as the source of income were more at the risk of malnutrition. This might be because of the fact that those elderly who received old age pension were people living in below poverty line in India and the amount is not able to cater their food needs properly. Donini cited that poverty, loneliness, and social isolation are the predominant social factors that lead to decreased food intake in the elderly.^[17] Majority of the respondents in the present study were having a regular income with 33.7% of the respondents engaged in an occupation. Article 39 of the directive principles of state policy has a provision in which it is stated that citizens are not forced by economic necessity to enter a vocation unsuited to their age and strength.^[18] Older persons remain economically active for longer period in less developed regions in the world because of the limited coverage of pension programmes and the relatively small incomes they provide.^[19] However, in the present study the prevalence of malnutrition was found to be least among them. This may be because, those who were engaged in an occupation are younger and are leading a more active life than those who were not engaged in an occupation or getting pension under the old-age pension scheme or pension from previous job. It is interesting to note that males were 91.2% literate while females

were only 32.7% literate. Among those who were illiterate 11% were malnourished with 63.6% of them at risk of malnutrition and among those who were literate 5.6% were malnourished with 41.8% of them to be at the risk of malnutrition. The present study finding of a significant association between malnutrition and education is in conformity with previous study findings made by Aliabadi et al and Kabir et al.^[13,20]

CONCLUSION

One out of every 12 elderly was malnourished and nearly half of them were at risk of getting malnourished. Females were more vulnerable. Those elderly who were living without a spouse, illiterate and having lower income were again more malnourished and more at risk of malnutrition. It is high time that the policy makers, the health care providers and other stakeholders in the society work together to care for the elderly in this context.

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